are given to other (test) groups. The content of the labelled compound is determined in those organs which have the best metabolic association with the nutrient preferably where it can be easily measured. It might then be possible to evaluate the value of the feed with respect to this particular nutrient. This method has the special advantage that the basal ration can contain all essential nutrients required for normal growth, in addition to which, the nutrients under investigation can be given in quantities which are limited only by the health of the animals. This may also be an advantage for nutrients needed only in small amounts and for which the more classical method of evaluation has been the ability to promote growth. The toxic amounts are usually several times larger than the nutrient requirements.

An experiment was carried out in which chicks were given 30 μc. sulphur-35-labelled L-methionine each by intravenous injection at an age of 6 weeks. The same basal mash was given throughout; but after the injection half the birds were given 8 g DL-methionine added to each kg of feed. The birds were killed 6–15 days after injection. The liver of the methionine-fed individuals had only 40–70 per cent of the activity of the controls.

The method has potential usefulness and it is hoped that it will be possible to work out details for the evaluation of content of available essential amino-acids in feedstuffs.

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Fatty Acid Oxidation in Irradiated Bone Marrow Cells

A PRIMARY event of the acute radiation syndrome is depressed haematopoiesis and an associated accumulation of fat cells in the bone marrow cavity. My work has shown that the fatty change occurs only at bone marrow sites directly exposed to ionizing irradiation. On the basis of metabolic investigations, I have concluded that irradiation markedly stimulates the biosynthesis of triglycerides in the bone marrow. Although *de novo* synthesis of fatty acids by irradiated bone marrow cells is impaired[1], both the uptake of lipid and the esterification of fatty acids into triglycerides by marrow cells are markedly stimulated in irradiated animals[2]. However, the matter of fatty acid oxidation by irradiated marrow cells has not previously been investigated. This communication conclusively demonstrates that fatty acid oxidation is severely inhibited by γ-radiation and that the effect is related to the total dose of radiation received.

The total-body irradiation (100, 300 and 800 r. at approximately 4 r./min) of rats for these experiments was effected in a specially designed room[3] under conditions described earlier[4]. Rats were killed by decapitation at 1, 2, 9, 16 and 55 days after the caesium-137 irradiation; femurs were rapidly removed, the ends were cut off, and the marrow contents were extruded on an ice plate for immediate addition to the iced reaction flasks. A 200-μl. aliquot of an albumin complex of palmitic-1-^{14}C acid (0·1 μc.) was added to a Warburg flask followed by additions of 20–40 mg rat femur marrow on a 'Millipore' filter and 2 ml. Krebs–Ringer phosphate buffer. The contents of the flask were flushed with 95 per cent oxygen–5 per cent carbon dioxide for 30 sec, sealed with a rubber plug, and incubated in a Dubnoff shaker at 37° C for 1 h. At the end of the incubation period the $^{14}CO_2$ content was collected in 'Hyamine' for liquid scintillation radioassay in a manner previously described[5].

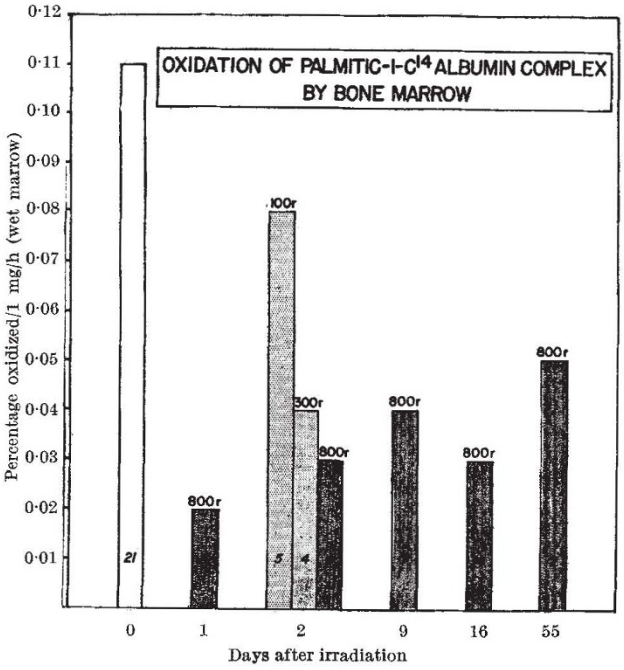

Fig. 1. The effect of total-body irradiation on the oxidation of palmitic-1-^{14}C acid by rat bone marrow. The numbers within each bar represent the number of flasks containing 20–40 mg marrow used in each group

Fig. 1 demonstrates that total-body irradiation significantly inhibits the oxidation of palmitic-1-^{14}C acid in marrow cells. As little as 100 r. caused fatty acid oxidation to be inhibited; as long as 55 days after the irradiation exposure, the bone marrow oxidized the fatty acid at only one-half the normal rate. The largest degree of inhibition by 800 r. occurred 1 day after exposure. The fact that this profound inhibition occurred at a time when the total amount of fat in the marrow was essentially normal[4] suggests that the inhibition seen at later intervals cannot be explained as a direct result of the presence of increased amounts of lipid.

The accumulation of triglycerides in irradiated marrow appears to be explained by increased biosynthesis of fatty acid esters and inhibition of fatty acid oxidation.

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BIOLOGY

Pogonophora in the Sub-antarctic

I HESITATE to ask for valuable space to try to put right some errors; but I think the matter is both biologically and historically important. I have only just seen Dr. D. B. Carlisle's translator's preface to his English edition of Dr. A. V. Ivanov's *Pogonophora* (Academic Press, London, 1963). I regret that it contains most serious misstatements, giving not only an entirely false impression of the abundance of pogonophores in the Sub-antarctic, but also making quite untrue accusations against the